

ABSTRACT

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5 A photo-ionization detector (PID) includes a
microprocessor, a first gas detection unit, and a second
gas detection unit. The microprocessor controls the
first and second gas detection units such that ambient
gas always flows through the ionization chamber of one
10 of the gas detection units while the flow of the ambient
gas is closed in the ionization chamber of the other one
of the gas detection units. The UV lamp converts oxygen
in the closed ambient gas to ozone, which removes
contamination in the ionization chamber with the closed
15 ambient gas. When the PID includes only one gas
detection unit, the microprocessor controls the gas
detection unit such that the flow of the ambient gas in
the ionization chamber is intermittently interrupted. A
method of real-time self-cleaning and measuring of a
20 volatile gas concentration with the PID includes flowing
the ambient gas through the ionization chamber of the
first gas detection unit, so that the PID measures the
volatile gas concentration, and stopping the ambient gas
through the ionization chamber of the second gas
25 detection unit so that the ambient gas is closed in the
ionization chamber of the second gas detection unit
while the ambient gas flows through the ionization
chamber of the first gas detection unit. The UV lamp
converts oxygen contained in the ambient gas in the
30 ionization chamber of the second gas detection unit to
ozone, which removes contamination in the ionization
chamber of the second gas detection unit.